

1 ABSTRACT

2 A slow wave structure for coupling RF energy with an
3 electron beam comprises a co-propagating RF section
4 including a plurality of pins having a uniform separation
5 from the plane of an electron beam axis. An output aperture
6 is positioned a half wavelength from a reflection section
7 comprising a change in depth of the pintles, such that RF
8 energy reflected by the change in pintle depth is added to
9 the RF energy traveling with the electron beam. One or more
10 rows of pintles are removed in the region of the output
11 aperture to enhance coupling to the output aperture. The
12 device may include a beam shaper for shaping the electron
13 beam to surround the pintles, and the beam shaper and
14 pintles may share common channels which are longitudinal to
15 the electron beam axis. The slow wave structure may operate
16 in forward and backward wave modes, and may be used in
17 conjunction with other structures to form amplifiers and
18 oscillators.